

What's next?



A Cross-Business Recommendation Engine for FEMSA

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Problem Statement

- FEMSA is one of Mexico's largest holding companies, and a **key player in beverages and convenience in Latin America**
- FEMSA's retail brand, Oxxo, has become the **largest convenience store chain in Mexico**
- FEMSA's digital wallet, Spin, provides **financial services and products in store**, where customers can pay their utility bills, buy phone top-ups, and make deposits
- FEMSA is now **shifting to an integrated ecosystem**, and as the company looks to generate synergies between businesses

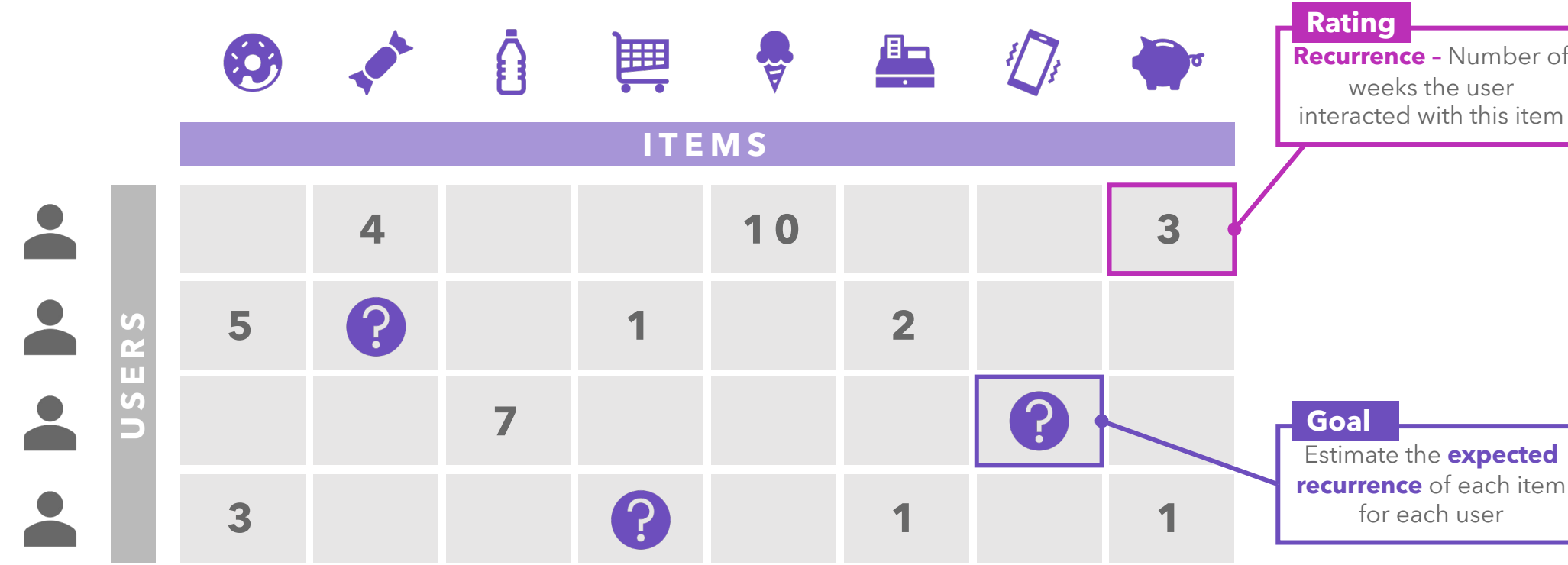
Objective



Our Data



- Our training dataset is **balanced based on user transaction type** (either only Premia, Spin or both verticals), on a 1:1:1 ratio for better recognition of cross-selling opportunities
- We have **26 items from Oxxo**, including macro-categories as candy and groceries; and **20 items from Spin**, including bill payments and deposits, among others



Methodology

BASELINE MODEL

- We used the model **Simple Algorithm for Recommendation (SAR)**, from the library recommenders (Microsoft):
 - Only based on transaction history
 - High accuracy (based on *affinity*)
 - Fast training
 - Fast scoring
- Product's ranking per user**, mainly based on interactions rather than explicit feedback

We tested the effectivity of our baseline model on **two controlled settings**, testing 8 categories on each, sending push notifications:



Value gap analysis

Given the experiment results, we estimate the **expected impact of deploying our Final Model**, using "same predicted category" users

FINAL MODEL

- Deep learning based
- Bilateral Variational Autoencoders → **Learns latent representations of users and items**
- Fast training
- Scalable

The better the recommender system, **less cross-selling occurs**

Allowing for previously seen items provides **less incentives to recommend new items**

Similarity based Recommendations

We identify **similarity groups** between *single-business* users and *both-business* users, mapping cross-sell opportunities



Stratified Recommendations

We order users based on their predictions; prioritizing **higher ranked recommendations** based on propensity



Results

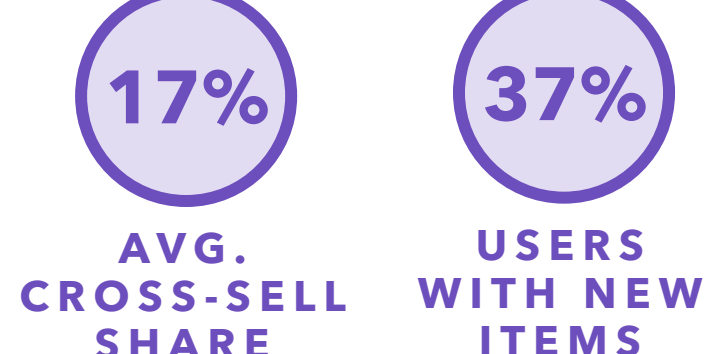
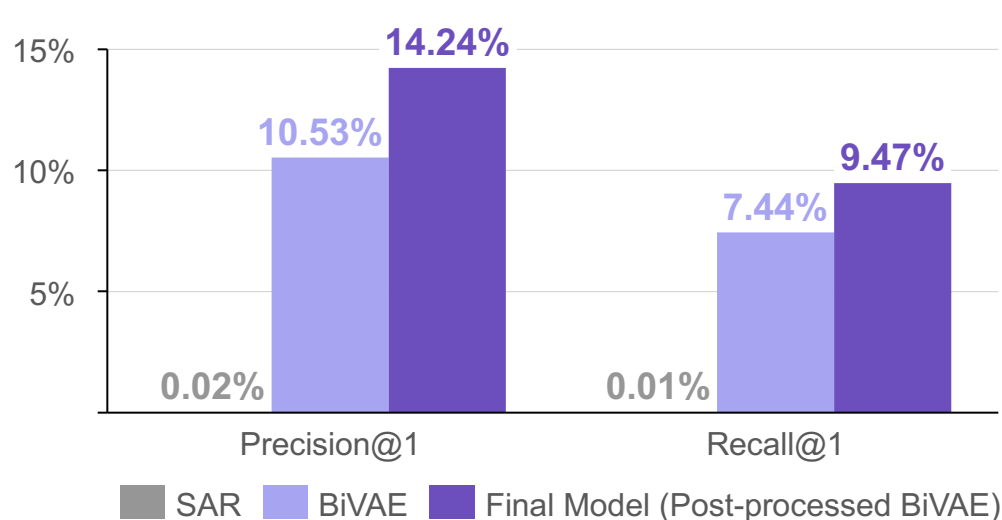
EXPERIMENTS

	CONTROL	GENERIC	CATEGORY
1 Oxxo Premia			
OPEN RATE	-	2.3%	2.1%
ITEMS PURCHASE IMPACT	-7%	-7%	-6%
2 Spin			
OPEN RATE	-	2.0%	2.2%
ITEMS PURCHASE IMPACT	-10%	-8%	-6%

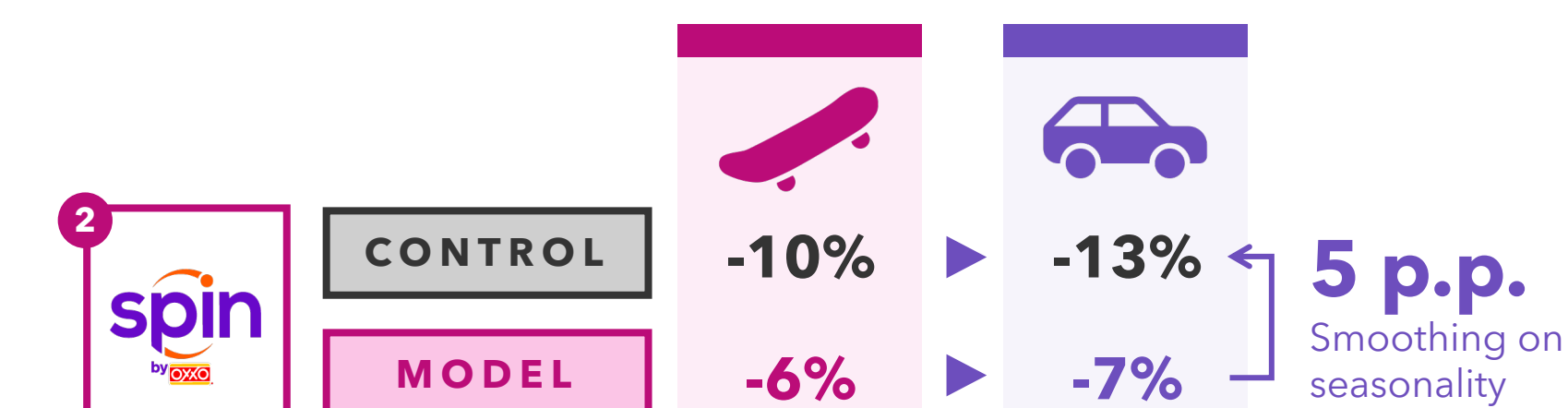
4 p.p. Smoothing on seasonality*

*Statistically significant at 85%.

FINAL MODEL PERFORMANCE



VALUE GAP ANALYSIS



Business Impact

ASSUMPTIONS

5.2% Purchased items impact | **1.5** USD/item on average | **250k** Customers/campaign

BASELINE MODEL EXPECTED VALUE ► **108k** USD/campaign

NEW EXPECTED VALUE PER CAMPAIGN

EFFICIENCY CAPTURE	50%	75%	100%
EXPECTED VALUE (USD)	126k	134k	143k

Next Steps

- ARCHITECTURE**
 - Pipeline development
 - Smoothing post-processing logics
 - Improving data quality, for less sparse datasets and accurate modeling
 - Application of additional business rules
- MODELLING**
 - Testing users level features with hybrid model alternatives once there's less sparse data
 - Testing user-level features in the post-processing similarity matching
- DEPLOYMENT**
 - Additional testing opportunities
 - Piloting once there's a proper architecture,
 - Brainstorming further use cases for the Final Model